

NOTES ON RAFINESQUE'S SPECIES OF *LECHEA* (CISTACEAE)

ROBERT L. WILBUR¹

It was suggested in an earlier paper (Wilbur & Daoud, 1961) that some of the twenty species of *Lechea* published by Rafinesque (1836) would eventually prove identifiable and that their names would replace binomials then current. This may have seemed an unwarranted assumption since three careful students of this technical genus had diligently studied Rafinesque's monograph and concluded that the descriptions were not adequate to identify the species intended with any degree of confidence. Leggett (1878) republished much of Rafinesque's monograph and suggested the possible identity of several of the taxa. Britton (1894) indicated that he had worked closely with Leggett in attempting to unravel the problems of the genus and together they had "pored over Rafinesque's monograph". They finally concluded that "unless type specimens could be found, there could be no certainty" in applying any of the names. Hodgdon (1938:30) suggested that Rafinesque's "perplexing" monograph left the genus in a "deplorable state" and claimed to have been able to identify only four of Rafinesque's twenty new binomials.

I believe however that the majority of Rafinesque's species of *Lechea* can be identified with considerable certainty even in the absence of types by comparing his descriptions with the species known to occur in the areas mentioned in the original publication. The results of this analysis are presented in the following paragraphs presented in the same order as Rafinesque's monograph (1836) and followed chronologically by his other papers dealing with the genus. Unfortunately, for stability's sake, three of Rafinesque's

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binomials must replace those of species long known by later names.

1. *Lechea pulchella* Raf., New Fl. N. Am. 1: 91. 1836.

Rafinesque definitely mentioned *L. pulchella* only from the pine barrens of New Jersey although suggesting that its range probably extended to the south. The species was described as being "quite smooth" and, as a member of Rafinesque's subgenus *Menandra*, it can be assumed that its outer sepals were noticeably shorter than the inner, a feature which helps to narrow the list of possible species to four. Of the seven species of *Lechea* known from New Jersey, only *L. maritima* Legg., *L. intermedia* Legg. ex Britt., *L. leggettii* Britt. & Holl. and usually *L. racemulosa* Michx. have external sepals exceeded by the inner. *Lechea maritima* may be safely discounted as a suspect as it could never be described as "quite smooth" even upon the most superficial observation and its cauline leaves tend to be whorled and not "scattered." Rafinesque described the leaves of *L. pulchella* as "scattered long linear" and its capsules as "obovate." These features make it possible to exclude *L. racemulosa* from consideration for its principal or lower and median cauline leaves are commonly opposite or even whorled and elliptic to lanceolate or even oblanceolate and perhaps more significantly it possesses a barrel-shaped or cylindrical capsule. Rafinesque's subgenus *Menandra* was described as having seeds 1-3 in number which agrees with the number characteristic of *L. leggettii* but not with the 4-6 seeds characteristic of *L. intermedia*. Furthermore *L. leggettii* is known from the New Jersey pine barrens while *L. intermedia* apparently is not. Leggett (1878: 247) questioningly suggested that Rafinesque's *L. pulchella* was the same as the species then called "*L. minor* Lam." which is what has recently been called *L. leggettii*. Leggett (1878: 250) twice encountered in the pine barrens "an abnormally smooth Lechea" which pretty well matched Rafinesque's description. These smooth plants were what is now called *L. leggettii*. Accompanying the original publica-

tion of *L. leggettii* the name var. *pulchella* was appended with *L. pulchella* Raf. questioningly listed in synonymy indicating Britton's earlier similar suspicions.

The evidence seems sufficiently convincing that I do not hesitate to take up Rafinesque's binomial for the species most recently known as *L. leggettii*. New combinations for the varieties recognized by Hodgdon are not made for I am not convinced that these tendencies represent biological varieties or subspecies. Rafinesque (1836: 91) named three varieties based upon the luxuriousness of the plants and the shape of the inflorescence. These varieties were var. *minor* Raf., var. *elegans* Raf. and var. *pyramidalis* Raf.

2. *Lechea cinerea* Raf., New Fl. N. Am. 1: 91. 1836.

Leggett (1878: 250) felt that Rafinesque's description was a "pretty correct" one for the species he had previously distributed as *L. torreyi*. He noted however that there were 3-seeded and 6-seeded forms of the species and hoped that his proposed *L. torreyi* would prove distinct. Hodgdon (1938: 106-107) discussed Rafinesque's description and concluded that it was apparently based upon two or more species. The original description includes nothing that would suggest to me that Rafinesque had both *L. torreyi* and *L. patula* as seemed likely to Hodgdon but the point is academic. Rafinesque parenthetically placed *L. thymifolia* Michx. in synonymy of his own *L. cinerea* and again in closing mentioned the possibility that it was "the real *thymifolia*." Rafinesque's binomial hence is illegitimate as nomenclaturally superfluous when published according to the International Code (Article 63). The fact that Michaux's binomial is actually a synonym of *L. minor* L. does not alter the fact that Rafinesque first placed Michaux's name unequivocally in the synonymy of his own species.

3. *Lechea ternifolia* Raf., New Fl. N. Am. 1: 91. 1836.

Rafinesque stated that his *L. ternifolia* from "Virginia, New Jersey and probably elsewhere" "must be the real

L. racemulosa" of Michaux. Both Rafinesque and Michaux quote the same Gronovian polynomial. And Rafinesque's description itself ("stem . . . adpressed pubescent, leaves and branches mostly ternate cuneate acute ciliate nearly smooth; racemes paniculate lax nearly naked, peduncles elongate, capsules oblong") indicates that *Lechea ternifolia* Raf. can be placed with confidence in the synonymy of *L. racemulosa* Michx. Leggett (1878: 247) with some question and Grosser (1894: 135) unequivocally placed Rafinesque's binomial in the synonymy of Michaux's species while Hodgdon (1938) did not mention it.

4. *Lechea furfuracea* Raf., New Fl. N. Am. 1: 92. 1836.

Leggett stated (1878: 250) that he had "never seen anything to which this description would apply." No one else has been able to suggest what species Rafinesque had from "Kentucky and Illinois" with "mealy pubescence and globose capsules," very short external calyx-lobes, and rounded internal and "narrow linear scattered nearly obtuse" leaves. According to the most authoritative listings of *Lechea* in Illinois (Jones & Fuller, 1955) and in Kentucky (Braun, 1943) there are in fact no species known to be common to both states possessing external calyx-lobes shorter than the inner. *Lechea racemulosa* Michx. is the only species from Kentucky whose calyx approximates Rafinesque's description and its capsule and foliage would definitely exclude it as a possible synonym of *L. furfuracea*. The three species from Illinois with appreciably shorter external than inner sepals are *L. stricta* Legg., *L. intermedia* Legg. and *L. leggettii* Britt. & Holl. Rafinesque's description is not detailed enough to permit me to determine which species he had.

5. *Lechea laxiflora* Raf., New Fl. N. Am. 1: 92. 1836.

Rafinesque's description seems certainly to apply to the species long known as *L. leggettii*. Leggett (1878: 247) thought it probably was "*L. minor* Lam." which was the name by which *L. leggettii* was known in the later nine-

teenth century. Rafinesque found this species in "the New Jersey Pine Woods with *L. pulchella*" to which he felt it closely related. The more significant points in Rafinesque's description are as follows: "smooth . . . branches lax, leaves scattered linear cuneate acuminate ciliate; racemes scattered lax, flowers remote naked, pedicels elongate, calix and capsules ovate." I recommend (see No. 1 above) that *L. pulchella* be adopted as the earliest name for this species with *L. laxiflora* placed in its synonymy. Rafinesque also distinguished a var. *brevifolia* with reddish rather than greenish flowers and shorter, more cuneate, less ciliate leaves. Rafinesque indicated that the principal difference between this species and his *L. pulchella* was chiefly in the leaves which in *L. pulchella* were "scattered long linear acute" and by inference eciliate in contrast to the acuminate, ciliate leaves of *L. laxiflora*.

6. *Lechea tenuifolia* Michx., Fl. Bor.-Am. 1: 77. 1803.

Rafinesque's account is largely a translation of Michaux's original description. It is placed by Rafinesque with those species with short external sepals while the species to which we apply the name has external calyx lobes equaling or more commonly longer than the inner. Rafinesque cited no localities other than the Santee River which had been cited in Michaux's original account so it is not certain whether Rafinesque had actually seen specimens of this species in spite of his statement that he had "specimens of all of the described species." Perhaps Rafinesque placed it with the species of *Lechea* with short calyx-lobes since Elliott (Sk. Bot. S. C. & Ga. 1: 185. 1816.) implied that this species had no external calyx and this statement was included by Rafinesque. Elliott in turn had been misled by Walter (Fl. Car. 83. 1788) who reported there was no outer calyx in his *L. juncifolia*, a species which has never been satisfactorily identified.

6[a]. *Lechea verna* Raf., New Fl. N. Am. 1: 92. 1836.

This binomial was published as a substitute name ("6. L.

tenuifolia Mx. Elliot or *L. verna* Raf. *L. juncifolia* Walter.") and is therefore illegitimate.

7. *Lechea recurvata* Raf. New Fl. N. Am. 1: 93. 1836.

This species was placed by Rafinesque in his subgenus *Menandra* possessing short external calyx-lobes. It was said to possess globose capsules and to occur "in Carolina and Virginia." I believe that this is the species referred to in the most recent monographs of Britton (1894) and Hodgdon (1938) as *L. leggettii*. If my interpretations of Rafinesque's species are correct, *Lechea pulchella*, *L. laxiflora* and *L. recurvata* are all prior names for the species now called *L. leggettii*. There are only two *Lecheas* common to both Virginia and "Carolina" possessing external calyx-lobes shorter than the inner; these two are *L. racemulosa* and *L. leggettii*. The described globose capsules of *L. recurvata* would seem to exclude *L. racemulosa* as a possibility although, judging by the following features mentioned "branches opposite and ternate, leaves broad oblong acute at both ends ciliate," it might seem a better match for Rafinesque's description than *L. leggettii*.

8. *Lechea mucronata* Raf., Précis des Découvertes Somiol. 37. 1814.

To my knowledge only House (New York St. Mus. Bull. 254: 497. 1924) has taken up this name although Robinson (Syn. Fl. N. Am. 1: 192. 1895) and Grosser (1903: 135) both placed it unquestioningly in the synonymy of *L. major* in the sense of Michaux but not of Linnaeus. *Lechea major* sensu Michaux, Robinson and Grosser is synonymous with *L. villosa* Ell. Hodgdon, the most recent monographer of the genus, concluded that there was not enough evidence presented in Rafinesque's original description to warrant the displacement of Elliott's *L. villosa*, a "well-characterized and clearly typified name." Rafinesque's original description is presented below in full so that others may form their own conclusions independent of my own interpretation. I am

indebted to Mrs. Lazella Schwarten, Librarian of the Harvard Herbaria, for making a copy of it available.

120. *Lechea mucronata*. Poilue, tige droite et simple, feuilles oblongues-cunéiformes mucronées, fleurs en grappe composée, bractéolées, bractées oblongues aigues. *Dans les bois du N. Jersey.*

Hodgdon stated (1938: 56) that the "only possible diagnostic features of Rafinesque's description are "feuilles oblongues-cunéiformes mucronées, fleur en grappe composée." He concluded that the statement concerning the arrangement of the flowers "might apply to most members of the genus" and that the described leaf shape would apply "equally well to *L. minor* as to *L. villosa*." The description's most definitive word in my opinion is "poilue," and in addition the habitat and geographical location certainly considerably narrow the number of possibilities.

"Poilue" meaning "shaggy, hairy or pilose" best describes the species recently called *L. villosa*. The features mentioned in the brief description single out the species long incorrectly known as *L. major* and more recently known as *L. villosa*. There are seven species of *Lechea* known from New Jersey: *L. minor*, *L. tenuifolia*, *L. racemulosa*, *L. maritima*, *L. leggettii*, *L. intermedia* and *L. villosa*. Of these seven the last mentioned alone seems indicated by Rafinesque's description of 1814. *Lechea maritima*, *L. leggettii* and *L. intermedia* all possess external sepals conspicuously shorter than the internal which would exclude them from consideration. Of the seven species of *Lechea* mentioned above found in New Jersey the term "poilue" would seem to me to exclude all but *L. villosa* and perhaps *L. maritima*. The description of the leaves, although not definitive, would seem to exclude *L. maritima* but include *L. villosa* whose leaves are often mucronate. It is true that the leaves of *L. minor* sometimes would fit Rafinesque's description as indicated by Hodgdon but certainly "poilue" would scarcely be used to describe the subappressed pubescence of that species.

Rafinesque (1836: 93) more fully described his *L. mucro-*

nata indicating it to be the same as the *L. villosa* of Elliott from whom he had received specimens. Included are statements puzzling even to a casual student of the group (e.g. "capsules ovate villose") but sufficient, I believe, to convince one that Rafinesque was indeed describing, although perhaps poorly, the species called *L. villosa* by Elliott. In passing it may be noted that the capsules of all species of *Lechea* are glabrous. There actually seems to be nothing other than prejudice why we should not take up Rafinesque's name for this species since it has two years priority over Elliott's *L. villosa*. Rafinesque (1836: 93) briefly described three varieties all of which came from the extensive area of Hodgdon's var. *typica*. The three varieties were var. *simplex*, var. *ramosa* and var. *sessiliflora*. New combinations have not been made for Hodgdon's var. *macrotheca* ranging from central Nebraska south into Texas or his var. *schaffneri* from northeastern Mexico since I have not seen enough material to form an opinion as to the merits of these proposed taxa.

9. *Lechea heterophylla* Raf., New Fl. N. Am. 1: 93. 1836.

Rafinesque described this species from Kentucky and Illinois as having an appressed pubescent stem and acute, carinate inner sepals about equaling the external. Neither Leggett (1878: 248) nor Grosser (1903: 140) would hazard a guess as to what it might be. The three species common to Kentucky and Illinois possessing external sepals at least occasionally equaling the inner are *Lechea villosa* Ell., *L. tenuifolia* Michx. and *L. minor* L. The shaggy pubescence of the stem of *L. villosa* would exclude it from further consideration. The leaves were described as "commonly ternate, lower obovate, sessile, upper cuneate and linear petiolate acute smooth." I believe this a better approximation of the greater variation shown between the lower and upper leaves of *L. minor* than the comparatively uniform condition exhibited by *L. tenuifolia*. The acute inner sepals on the other hand are a better fit for the "subacute" condi-

tion of *L. tenuifolia* than the "obtuse" inner sepals of *L. minor*. I suspect Rafinesque was describing *L. minor* since the conspicuous difference in the foliage was less subject to error by Rafinesque than the shape of the apex of the inner sepals. Rafinesque placed "L. minor Smith" in the synonymy of his *L. heterophylla* but his description would exclude the villous species that was apparently considered *L. minor* by J. E. Smith. Britton (1895: 248) has demonstrated that Smith's *L. minor* was the species which Elliott called *L. villosa*. Rafinesque published the following three varieties of this species: var. *major* Raf., *op. cit.* 94. 1836, var. *minor* Raf., *l.c.* and var. *parviflora* Raf., *l.c.* and only the last of these was even briefly described.

10. *Lechea glomerata* Raf., New Fl. N. Am. 1: 94. 1836.

Rafinesque's description of this species from the "Aplachian mts." strongly points to *L. mucronata* Raf. (= *L. villosa*) except for his characterization of it as "smooth." The carinate sepals, short pedicellate, glomerate flowers, linear external sepals about equaling the internal, the trigonous calyx surrounding the subglobose capsule and the mucronate, petiolate leaves are all indicative of *L. villosa* but that species is apparently always densely villous to spreading pilose. Leggett (1878), Grosser (1903) and Hodgdon (1938) have all found it impossible to identify Rafinesque's description and I claim no greater success.

11. *Lechea corymbosa* Raf., New Fl. N. Am. 1: 94. 1836.

The description of this species from the "Alleghany" Mountains, belonging to Rafinesque's subgenus *Lechea*, a group characterized by the external and internal sepals equaling one another, is most suggestive of *L. villosa* Ell., a later synonym of *L. mucronata* Raf. (see No. 8 above). The original description of *L. corymbosa* ("stem . . . pilose . . . , leaves petiolate broad oblong nearly obtuse, . . . flowers corymbose, pedicels equal to flowers, sepals round concave, ext. linear, capsules globose . . . 6 to 12 inches high

. . . capsules large with 3 to 6 seeds . . .”) is not especially definitive but I believe it is most suggestive of *L. mucronata* of the species occurring in the Alleghenies.

12. *Lechea surculosa* Raf., New Fl. N. Am. 1: 94. 1836.

Leggett (1878: 248) questioningly suggested that this description might be *Lechea minor* [in the sense of] Lam. which is the species most recently called *L. leggettii* Britt. & Hollick. This seems an unlikely identification since *L. leggettii* is characterized by its external sepals being pronouncedly shorter than the inner while *L. surculosa*, as a member of Rafinesque's subgenus *Lechea*, would be expected to have the inner and outer sepals of approximately equal length. It is certainly true that one can not place the species of *Lechea* into three groups depending on whether the external sepals are shorter, equaling, or longer than the internal since there is too much variation in the relative length of the sepals in several species but the external sepals of *L. leggettii* are always clearly appreciably shorter than the inner. Rafinesque's species was described as possessing "acute" inner sepals while those of *L. leggettii* are clearly obtuse. There are other discrepancies, but the two mentioned are sufficient to discount completely Leggett's suggestion.

Rafinesque knew this plant from "Pennsylvania on dry hills" and indicated it was the *L. minor* of some authors. I believe the description of *L. surculosa* best matches the characteristics of *L. racemulosa*, a species whose external sepals range from obviously shorter than the inner sepals to equaling them. The inner sepals of *L. racemulosa*, according to Hodgdon's description, vary from "subacute to obtuse" while Rafinesque described those of *L. surculosa* as "acute." The capsule of *L. racemulosa* was described in Hodgdon's monograph as "slenderly ellipsoid to slenderly ovoid" while Rafinesque said those of *L. surculosa* were "ovate." Rafinesque described the sterile stems of *L. surculosa* as "pilose with leaves ternate ovatooblong acute ciliate"

which is a reasonably close approximation of Hodgdon's description of the basal shoot of *L. racemulosa*: "basal leaves frequently verticillate, . . . oblong-ovate to elliptic-lanceolate, acute to slightly mucronulate . . . prominently spreading-pilose to villous on the margins." The other species of *Lechea* from Pennsylvania with external lobes approximately equaling the inner at least occasionally (*L. villosa*, *L. tenuifolia* and *L. minor*) have characters which compare unfavorably with those delineated by Rafinesque. The "smooth" branches and "linear" leaves of Rafinesque's *L. surculosa* are sufficient to discount it as a possible synonym of *L. villosa* (= *L. mucronata*). The basal leaves of *L. tenuifolia* were described by Hodgdon (1938: 87) as "narrowly lanceolate or oblanceolate to linear" which certainly implies a much narrower leaf than does Rafinesque's description and the cauline leaves of *L. tenuifolia* are described by Hodgdon as "scattered" while Rafinesque described those of *L. surculosa* as "opposite and alternate." I believe then that *L. surculosa* Raf. is an ecologically modified form of *L. racemulosa* Michx. and that it should be placed in its synonymy.

This binomial first appeared three years earlier in Rafinesque's *Herb. Raf.* 68. 1833 but without description.

13. *Lechea revoluta* Raf., *New Fl. N. Am.* 1: 94. 1836.

Rafinesque stated that this species is the *Lechea* "minor of Lin. not of Smith nor other Authors" and that the "description is taken from Linnaeus altogether, and agrees very well with some specimens [that Rafinesque had] from the Alleghenies of Pennsylvania." Nomenclaturally the binomial is a synonym of *Lechea minor* L. Rafinesque provided a new name since J. E. Smith had indicated that Linnaeus had confounded several species within his *L. minor*.

14. *Lechea virgata* Raf., *New Fl. N. Am.* 1: 95. 1836.

This Alleghenian species was described as possessing

pubescent stems, opposite, whorled or even scattered, petio-
late, linear, cuneate, ciliate, acuminate leaves with acute,
carinate inner sepals, pedicels equaling the flower-length
and ovate capsules. As a member of subgenus *Lechea*, it
can be safely assumed that its external sepals equaled the
inner. There are four species within the area of the Alle-
gheny Mountains whose external sepals may commonly or
occasionally equal the internal ones. These four species are
Lechea minor L., *L. racemulosa* Michx., *L. tenuifolia* Michx.
and what has been most recently referred as *L. villosa* Ell.
The description is an unusually full one for Rafinesque and
the above mentioned characters seems best to describe *L.*
tenuifolia Michx. of the four species listed above from the
Alleghenies whose external sepals commonly or occasionally
equal the inner. The linear leaves, which are the only type
mentioned for *L. virgata*, are sufficient to exclude *L. villosa*
and *L. minor* from further consideration. The inner sepals
of *L. racemulosa* are non-carinate while those of *L. virgata*
were described as carinate. Two varieties were appended
to this species with brief description: var. *breviflora* and
var. *bracteata*.

15. *Lechea floridana* Raf., New Fl. N. Am. 1: 95. 1836.

There are eight species of *Lechea* known from Florida
(Hodgdon, 1938; Wilbur & Daoud, 1961). Five of these (*L.*
deckertii Small, *L. leggettii* Britt. & Holl., a later synonym
of *L. pulchella* Raf. as is pointed out in no. 1 above, *L. tor-*
reyi Legg. ex Britt., *L. divaricata* Shuttlew. ex Britt. and
L. cernua Small) possess external sepals conspicuously
shorter than the internal. The three others (*L. villosa* Ell.,
a later synonym of *L. mucronata* Raf. as is discussed in
no. 8 above, *L. minor* L. and *L. patula* Legg.) all possess
external sepals conspicuously shorter than the internal, as
was described by Rafinesque for his *L. floridana*. None of
these three species is "smooth" as mentioned by Rafinesque
but certainly the copious, spreading villosity of *L. mucro-*
nata (= *L. villosa*) together with its oblanceolate leaves ex-
cludes it from consideration. The appressed pubescence of

L. patula and *L. minor* could easily have been overlooked, especially if the specimens were aged, by an observer as hasty and superficial as Rafinesque often gives evidence as having been. The leaves of *L. floridana* were said to be "scattered, minute linear" which is more suggestive of *L. patula* than of *L. minor*. The external calyx of *L. floridana* was implied to equal the inner which is sometimes true of both *L. patula* and *L. minor*. The external sepals of *L. patula* most frequently are a little shorter than the inner but range up to slightly longer while those of *L. minor* rarely are as short as the inner and most frequently are conspicuously longer. The capsules of *L. floridana* were said to be ovate which is not a very apt description for the capsule of either species but, interpreted as "ovoid," not impossibly bad for either. I suspect this to be a form of *L. patula* Leggett but due to the discrepancies mentioned would not feel its identity completely certain.

16. *Lechea secundiflora* Raf., New Fl. N. Am. 1: 95. 1836.

This species came from "the glades of West Kentucky" making it impossible that its binomial could ever displace that of any of the four species definitely known from that state since each has an older name. The known species are *L. villosa* Ell., a later synonym of *L. mucronata* Raf., *L. minor* L., *L. tenuifolia* Michx. and *L. racemulosa* Michx. Rafinesque's description fits none well and there are mentioned features that would exclude each of the geographical possibilities. Grosser (1903: 135) placed Rafinesque's name in the synonymy of *L. minor* but his description of "leaves scattered, lax narrow linear, . . . flowers remote secund" would, as pointed out by Hodgdon (1938: 60), make that an unlikely choice. Hodgdon (1938: 88) placed Rafinesque's binomial in the synonymy of *L. tenuifolia* Michx. although the description of the capsules as "oblong" and the inner calyx as "lanceolate" causes considerable doubt as does Rafinesque's description of the plant as "smooth." I am unable to identify the binomial and believe the mentioned discrepancies are of such magnitude as to prevent one from

assigning it with confidence to the synonymy of any species known from Kentucky.

17. *Lechea pauciflora* Raf., New Fl. N. Am. 1: 96. 1836.

The identity of the plants described by Rafinesque under this binomial from "Near the Sea Shore in Long Island and New Jersey" was questioningly suggested by Leggett (1878: 250) to be *L. thymifolia* in the sense of Pursh which is *L. maritima* Legg., a species whose external sepals are much shorter than the heavily appressed-pilose internal calyx. Rafinesque placed *L. pauciflora* in his subgenus *Eudiexa*, characterized by outer sepals exceeding the inner, and in the diagnosis of the species specifically stated "sepals smooth, external a little longer." Grosser (1903: 135) assigned Rafinesque's binomial to the synonymy of *L. minor* L., a disposition to which Hodgdon (1938: 60) objected, feeling the described 3-inch specimens to be an "ecological variant of some other species" whose identity was undecipherable because of the incompleteness of the original publication. The only two species apparently known from both Long Island and New Jersey with outer sepals longer than the inner and "adpressed pubescent" stems are *L. tenuifolia* Michx. and *L. minor* L. Rafinesque described the capsules of his *L. pauciflora* as "globose" which among other features mentioned in the description would eliminate *L. minor*. The leaves of Rafinesque's species were described as "rather obtuse" which together with the "smooth" calyx makes it difficult to place this name in the synonymy of *L. tenuifolia* with which the description agrees in most other respects. Therefore I am unable to suggest the identity of this binomial.

18. *Lechea brevifolia* Raf., New Fl. N. Am. 1: 96. 1836.

Leggett (1879: 249) was "quite at a loss" as to what species Rafinesque's description might apply while Grosser (1903: 135) placed the binomial in the synonymy of *L. minor* L. without discussion. Hodgdon (1938: 60), while

admitting that much of Rafinesque's description applied to *L. minor*, felt that the diagnosis of "flowers secund, pedicels equal" indicated confusion on the author's part. Hodgdon's objection on these grounds are difficult to understand for the flowers and fruit are sometimes secund as his own description of *L. minor* L. admits (p. 59 "fruit mostly clustered, at times scattered or even secund") and the 1-2 mm. long pedicels are often equal to one another or to the flowers. The species came from the "Mts. Apalaches" (Appalachian Mts.) and I believe it most probable that this binomial belongs in the synonymy of *L. minor*.

19. *Lechea uniflora* Raf., New Fl. N. Am. 1: 96. 1836.

Leggett (1878: 249) was unable to suggest what species Rafinesque was describing based upon 3-4 inch specimens from the mountains of Maryland possessing few leaves or flowers and longer outer sepals than inner and with a 6-seeded, globose capsule. Grosser (1903: 135) placed the binomial in the synonymy of *L. minor* L. but Hodgdon (1938: 61) disagreed with this placement concluding that it was "hopeless to try to identify this particular one of Rafinesque's Lecheas." I am in total agreement with Hodgdon for I too am unable to suggest the identity of *L. uniflora*. There are too many features mentioned in its original description which are at complete variance with the characteristics of *L. minor* for us to accept Grosser's identification. To my knowledge a "smooth" specimen of *L. minor* with globose 6-seeded capsules has not been reported.

20. *Lechea stellata* Raf., New Fl. N. Am. 1: 96. 1836

I am in complete agreement with Leggett's decision (1878: 251) that this description is "undoubtedly the *L. thymifolia*" of Michaux which is a synonym of *L. minor* L. The more diagnostic portions of Rafinesque's description seem to be as follows: "Pilose . . . leaves 3-4 nate petiolate elliptic mucronulate, upper leaves alternate lanceolate; racemes foliose, . . . ext. sepals very long, capsules ovate-

oblong." Both Grosser (1903: 135) and Hodgdon (1938: 61) considered *L. stellata* to be synonymous with *L. minor*, although the latter fails to place it formally in the synonymy of that species.

21. *Lechea sessiliflora* Raf., New Fl. N. Am. 1: 97. 1836.

Leggett (1878: 251) thought that the description accompanying this binomial might "possibly be *L. patula*" but no species known to him had sessile mature flowers. In spite of this, Index Kewensis equated Rafinesque's binomial with *L. patula* Legg. and Grosser (1903: 138) unquestioningly placed it in the synonymy of that species. Hodgdon (1938: 63) felt that Rafinesque's description could not be positively identified but that its sessile flowers and 3-9-seeded capsules obviously excluded the pedicellate, 1(2)-seeded *L. patula* as a possibility. However, since no *Lechea* is actually sessile, it would perhaps be only reasonable to interpret Rafinesque's description as "subsessile" and consider short-pedicelled species as possibilities. Also, since no known species of *Lechea* possesses more than 6 seeds, we had best treat the 3-9-seeded condition attributed by Rafinesque to his subgenus *Eudiexa* as an obvious error. It is well to note that Rafinesque did not mention seed-number in his diagnosis of *L. sessiliflora*; seed number was stated only in conjunction with the characterization of the subgenus.

There are five species known to be common to both Florida and Alabama: *Lechea villosa* Ell., *L. minor* L., *L. patula* Legg., *L. leggettii* Britt. and *L. torreyi* Legg. ex Britt. The two last-mentioned of these can be discounted as possibilities since their external sepals are considerably shorter than the internal and the reverse is clearly described as the state of *L. sessiliflora*. *Lechea villosa* can be eliminated from consideration since its shaggy-villous stems could never be described as "adpressed pilose" while both *L. minor* and *L. patula* both fit that characteristic. Rafinesque's characterization of the species "branches diffuse virgate, leaves scattered . . . linear . . . ext. sepals linear not much longer . . ." all point most clearly to *L. patula* rather than to *L. minor*.

I believe that Leggett's suspicion as to the identity of *L. sessiliflora* has been fully confirmed. There is hence no reason not to take up *L. sessiliflora* Raf. which has forty-two years priority over Leggett's *L. patula*.

The remaining names proposed by Rafinesque are listed below:

Lechea linifolia Raf., Atl. Jour. 1: 18. 1832. *nom nud.*

Lechea paucifolia Raf., Atl. Jour. 1: 18. 1832. *nom. nud.*

Lechea mexicana Raf., Sylva Tell. 133. 1838.

Rafinesque provided this as a substitute name for *Helianthemum tripetalum* of Mexico no doubt because *tripetalum* was a pointless epithet in a genus characterized by three petals. The name is nomenclaturally superfluous and therefore illegitimate (Art. 63).

DEPARTMENT OF BOTANY, DUKE UNIVERSITY
DURHAM, NORTH CAROLINA

LITERATURE CITED

- BRAUN, E. LUCY. 1943. *Lechea* in An Annotated Catalog of Spermatophytes of Kentucky. p. 93.
- BRITTON, N. L. 1894. A Revision of the Genus *Lechea*. Bull. Torrey Club 21: 244-253.
- GROSSER, W. 1903. *Lechea* in Engler's Das Pflanzenreich 14 (IV. 193): 133-140.
- HODGDON, A. R. 1938. A Taxonomic Study of *Lechea*. Rhodora 40: 29-69, 87-131. (Reprinted as Contrib. Gray Herb. 121.)
- JONES, G. N. & G. D. FULLER. 1955. *Lechea* in Vascular Plants of Illinois. pp. 328-329.
- LEGGETT, W. H. 1878. Rafinesque's *Lechea*. Bull. Torrey Club 6: 246-252.
- RAFINESQUE, C. S. 1836. Monograph of *Lechea*. New Flora and Bot. of N. Am. pp. 89-98.
- WILBUR, R. L. & H. S. DAUD, 1961. The Genus *Lechea* (Cistaceae) in the Southeastern United States. Rhodora 63: 103-118.